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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/967,094	09/28/2001	Siddhartha Bhowmik	Bhowmik 12-146-1/075903-3	7197
29391	7590	09/30/2005		EXAMINER
		BEUSSE BROWNLEE WOLTER MORA & MAIRE, P. A.		ERDEM, FAZLI
		390 NORTH ORANGE AVENUE		
		SUITE 2500	ART UNIT	PAPER NUMBER
		ORLANDO, FL 32801		2826

DATE MAILED: 09/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)
	09/967,094	BHOWMIK ET AL.
	Examiner Fazli Erdem	Art Unit 2826

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 14 July 2005.  
 2a) This action is FINAL.                            2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 1,3-7,9,12-17 and 19 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) 1,3-7,9,17 and 19 is/are allowed.  
 6) Claim(s) 12-16 is/are rejected.  
 7) Claim(s) \_\_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) Notice of References Cited (PTO-892)  
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)  
 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
 Paper No(s)/Mail Date \_\_\_\_\_

4) Interview Summary (PTO-413)  
 Paper No(s)/Mail Date \_\_\_\_\_  
 5) Notice of Informal Patent Application (PTO-152)  
 6) Other: \_\_\_\_\_

**DETAILED ACTION**

***Allowable Subject Matter***

1. Claim 1, 3-7, 9, 17 and 19 allowed.

***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 12-16 rejected under 35 U.S.C. 103(a) as being unpatentable over Tao et.al. (2002/0144889) in view of Shimada et al. (5,229,323) further in view of Bauer (4,647,361).

Regarding Claims 12-16, Tao et al. disclose a process for high density PVD chamber where in Fig. 1 it is disclosed a chamber 100 within with sputter deposition is performed, a target 106 mounted in the chamber, a coil 102 mounted in the chamber below the target, a pedestal 108 adapted to support semiconductor source positioned below the tungsten coil and means 118, 132, 133, 136 associated with the chamber for generation of a plasma within the chamber above the surface of the semiconductor device.

Regarding Claim 13, element 133 is a DC power source in Fig. 1

Regarding Claim 14, element 14 is the source of Argon

Regarding Claim 15 and 16, RF power source is 104.

Tao et al. fail to specifically disclose the target to be tungsten silicide and the coil to be of tungsten. However, Shimada et al. disclose a method for manufacturing a semiconductor device with Schottky electrodes where in claim 13, in column 6, the target is specified to be of tungsten silicide. Furthermore, Bauer discloses a sputtering apparatus where in Fig 3, coil 38 is specified to be tungsten.

It would have been obvious to one of having ordinary skill in the art at the time the invention was made to include the required tungsten silicide target and tungsten coil in Tao et al. as taught by Shimada et al. and Bauer in order to have a semiconductor device with tungsten/tungsten silicide barrier layer.

### *Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fazli Erdem whose telephone number is (571) 272-1914. The examiner can normally be reached on M - F 8:00 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan Flynn can be reached on (571) 272-1915. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

FE  
September 27, 2005



NATHAN J. FLYNN  
SUPERVISORY PATENT EXAMINER  
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